

EXHIBIT 6

4232 29th Ave.
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John P. Abraham
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612-963-2169 (mobile)

APPOINTMENTS

Professor , <i>University of St. Thomas, St Paul, MN</i>	2013-Present
Associate Professor , <i>University of St. Thomas, St Paul, MN</i>	2008-2013
Assistant Professor , <i>University of St. Thomas, St Paul, MN</i>	2002-2008

EDUCATION

<i>University of Minnesota - Twin Cities, Minneapolis, MN</i>	
Ph.D. , Mechanical Engineering (Thermal Sciences)	2002
M.S. , Mechanical Engineering, GPA 3.96/4.00	1999
B.S. , Mechanical Engineering, GPA 4.00/4.00, Minor : Mathematics	1997

TEACHING EXPERIENCE

Adjunct Faculty , <i>University of St. Thomas, St Paul, MN</i>	2000-2002
Graduate Teaching Fellow , <i>University of Minnesota, Minneapolis, MN</i>	2001-2002
Teaching Assistant , <i>University of Minnesota, Minneapolis, MN</i>	1997-2001
Tutor , <i>University of Minnesota, Minneapolis, MN</i>	1993-1997

CONSULTANTSHIPS

<i>Cargill, MN</i>	2016-2017
<i>EKOS, MN</i>	2016-2017
<i>Precision Air, MN</i>	2016
<i>3M, MN</i>	2015-2017
<i>Flourescence, Inc., MN</i>	2015
<i>Smiths Medical, MN</i>	2014-2015
<i>WTS LLC, MN</i>	2014-2015
<i>Medivators, MN</i>	2014-2015
<i>Somnetics, MN</i>	2014
<i>Lake Region Medical, MN</i>	2013-2014
<i>Amphora Medical, MN</i>	2013-2014
<i>ALS Consulting, MN</i>	2013-2016
<i>Medtronic, Fridley, MN</i>	2013-2016
<i>Devicix, MN</i>	2012-2013
<i>CriticCare, MN</i>	2012
<i>HRST, Inc., MN</i>	2012-2015
<i>QIG Group, OH</i>	2011-2013
<i>Phraxis, MN</i>	2011-2012
<i>Cardiovascular Systems, Inc., Roseville, MN</i>	2007-2015
<i>Translational Biologic Infusion, AZ</i>	2011-2013
<i>Galil Medical, Roseville, MN</i>	2011
<i>Imation, Oakdale, MN</i>	2010
<i>Medtronic, Fridley, MN</i>	2008-2011
<i>R4 Engineering, India</i>	2008-2009
<i>Horizontal Winds,</i>	2008-2009
<i>Lockheed Martin, Eagan, MN</i>	2007-2009
<i>St. Jude Medical, Minnetonka, MN</i>	2007-2009
<i>Arizant Medical, Eden Prairie, MN</i>	2006

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<i>Johnson and Johnson, Newark, NJ</i>	2004-2005
<i>Cortron/XeteX, Fridley, MN</i>	2005
<i>Donaldson Co., Bloomington, MN</i>	1999-2003
<i>Augustine Medical, Eden Prairie, MN</i>	2000-2003
<i>Midmac Systems Inc., St Paul, MN</i>	2002
<i>Remmele Engineering Inc., St Paul, MN</i>	2002-2005
<i>Urologix, Minneapolis, MN</i>	circa 2004
<i>Caterpillar, Minneapolis, MN</i>	circa 2000
<i>ADC telecom, Minneapolis, MN</i>	circa 2000
<i>XeteX, Inc., Minneapolis, MN</i>	1996-2000
<i>Pneuseal, St. Paul, MN</i>	1996-1998
<i>Los Alamos National Laboratory, Los Alamos, NM</i>	1994

GRANTS (PI funding \$1.477 million)

Pride Engineering	2017
\$3k to calculate a metal stamping machine	
Orbital ATK	2017
\$30k to simulate fluid flow	
Medtronic	2017
\$5k to research thermal tolerance of brain tissue	
\$14k to calculate cranial temperature increases during transcranial recharge	
3M	2017
\$14k to simulate airflow in ultra-clean operating rooms.	
Zoll Engineering	2017
\$5.5k for design of flow through a ventilation medical device	
Cargill	2016-2017
\$14k for analysis of food frier	
\$15k for analysis of a food processing device	
EKOS	2017
\$14k for analysis of flow distribution within stents	
\$14k for analysis of flow distribution within stents	
\$12k for analysis of flow distribution within stents	
ALS Consulting	2016
\$15k for analysis of fluid flow in power plants	
Precision Air	2016
\$1600 for simulation of airflow in operating rooms	
Medtronic	2016
\$12k for simulation of tissue temperatures during transcutaneous recharge	

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3M	2015
\$12k to simulate airflow in ultra-clean operating rooms.	
Cardiovascular Systems, Inc.	2015-2016
\$8,000 for the study of deformable arteries	
AF Energy	2015
\$3000 wind turbine calculations	
Intellectual Ventures Laboratory	2015
\$2000 wall condensation calculations	
Medivators	2015
\$4000 for flow and pressure calculations medical chamber.	
Floursecence, Inc.	2015
\$2,000 designing biological heater for cell environments	
Mador Technologies	2015
\$20,000 analyzing a liquid nitrogen water condensation device	
Koronis Biomedical Technologies	2015
\$5,000 simulation of fluid flow	
Mador Technologies	2014-2015
\$8,000 analyzing a liquid nitrogen water condensation device	
National Resources Defense Council	2015
\$10k for climate education work	
Medtronic	2014
\$12k for simulation of tissue temperatures during transcutaneous recharge	
Smiths Medical	2014
\$9.5k for design and optimization of medical warming blankets	
\$10k for the design and improvement of medical fans	
\$12k for the design and analysis of human thermal analogs	
WTS LLC	2014-present
\$275k for the design of solar pasteurization systems	
Medivators	2014
\$4000 for flow and pressure calculations medical chamber.	
\$3000 for flow and pressure calculations medical chamber.	
Somnetics	2014

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\$6000 for flow and pressure calculations in CPAP devices.

Lake Region Medical	2013-2014
\$4500 for simulations of a guidewire manufacturing oven	
Amphora Medical	2013-2014
\$55.5k for design of RF probes for ablation of bladder tissue	
ALS Consulting	2013-2014
\$17.5k for analysis of fluid flow in power plants	
Medtronic, Inc.	2012-2013
\$13k for analysis of subdermal heating associated with recharge of neuromodulation systems.	
Phraxis	2013
\$2,250 for the analysis of blood flow through an AV shunt	
Translational Biologic Infusion Catheter	2011-2013
\$21.5k for the study of flow and pressure drop in a stem-cell delivery catheter	
Advanced Circulatory Systems, Inc.	2013
\$4200 for fluid flow modeling of medical-device blowers	
HRST, Inc.	2012-2015
\$11,250 for analysis of flow patterns in manifolds	
Devicix	2012
\$2000 for the analysis of medical-fluid injection devices	
Helical	2012-2013
\$18,200 for the design and analysis of rooftop wind turbines	
QiG Group	2012
\$7000 for study of thermoelectric technologies to power implants	
HRST, Inc.	2012
\$4300 for analysis of perforated plates for flow uniformity	
Energy Foundation	2012-2013
\$30k developing climate-science communication strategies	
CriticCare	2012
\$4,275 for numerical modeling of accelerated aging of medical devices.	
HRST, Inc.	2012
\$5,540 for research study on mixing efficiency in heat recovery plants.	

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Windstrip, LLC	2009-2013
\$250k for development of vertical axis wind turbines to power cellular communication equipment.	
QiG Group	2011-2012
\$20k for study of implant heating of biological tissue	
Phraxis	2011-2012
\$8,000 for the analysis of blood flow through an AV shunt	
Energy Foundation	2011-2012
\$71k developing climate-science communication strategies	
Cardiovascular Systems, Inc.	2011
\$23k for the study of paclitaxel distribution techniques.	
Galil Medical	2011
\$9,000 for the kidney tumor cryosurgical devices.	
Multiple groups	2010
\$13,000 for installation of solar panels in Uganda	
Imation	2010
\$10k for the design of a polymeric extrusion die	
Cypress Wind	2010
\$30.6k for the development of a vertical axis, small-footprint wind turbine.	
Cypress Wind	2009
\$27k for the development of a vertical axis, small-footprint wind turbine.	
Cardiovascular Systems, Inc.	2009
\$80k for the study of cavitation and bolus formation during orbital atherectomy procedures.	
Medtronic, Inc.	2008-2011
\$65k for analysis of subdermal heating associated with recharge of neuromodulation systems.	
University of St. Thomas Faculty Development Grant	2009
\$4,200 for the purchase of a high-performance computer for numerical simulations.	
CSUMS: A computational Traininig and Interdisciplinary Research Program for Undergraduates in the Mathematical Sciences at the University of St. Thomas	2008-2013
Served as Senior Personnel on a \$716,836 NSF award for the development of applied research projects for undergraduates in mathematics.	

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Lockheed Martin Innovative Program - Advanced Cooling Technology grant	2009
\$19.5k for the improvements to avionics heat pipe applications.	
Horizontal Winds	2008-2009
\$11k for research on vertical-axis wind turbines	
R4 Engineering	2008-2009
\$10k for analysis of building-support insulation systems	
Lockheed Martin Innovative Program - Advanced Cooling Technology grant	2007
\$53k for the development of advanced electronic-cooling methodologies.	
Principal Investigator – Supercomputing Institute	2002-2012
Served as PI for multi-year project dedicated to performing computational fluid dynamic studies. This grant awarded computing resources at the Supercomputing Institute for Digital Simulation and Advanced Computing.	
Principal Investigator – ASHRAE Project Grant Program	2003
Awarded a \$5,000 grant funded by ASHRAE to investigate the efficacy of rotating-wheel heat and moisture exchangers.	
Faculty Advisor – Bush Grant, Young Scholars Program	2002
Faculty advisor for a \$3,000 grant for undergraduate research of air-jet heat transfer for surgical applications.	
Faculty Advisor – Bush Grant, Young Scholars Program	2002
Faculty advisor for a \$3,000 grant for undergraduate research to encourage American Indian students to pursue careers in science and technology.	
A Multi-Function Heat Exchanger for Control of Temperature, Moisture, and Air Quality	1997-2000
Project Engineer for \$475K SBIR grants awarded by NSF, grant nos. 9660900 and 9801062	
HONORS/AWARDS/PROFESSIONAL ACTIVITIES	
<ul style="list-style-type: none"> • National Center for Science Education Friend of the Planet Award (2016) • University of St. Thomas Professor of the Year (2016) • Will Steger Foundation Advisory Board • Science Advisor, Citizens Engagement Lab, Climate Disaster Response Fund. • USA Green Deal of the Year business excellence award (2013) • IPCC AR5 Expert Reviewer (2011-2013) • Composites Sustainability Award, American Composites Manufacturers Association Award for Composite Excellence, (2013) • Nominated, George Mason University, Center for Climate Change Communication, Climate Change Communicator of the Year (2011) • University of St. Thomas John Ireland Award (2009) 	

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- NSF Review Panel Member, Chemical, Bioengineering, Environmental and Transport Systems (2009)
- University of St. Thomas Distinguished Educator Award (2008)
- NSF Review Panel Member, Division of Civil, Mechanical, and Manufacturing Innovation (2008)
- Associate Fellow of the Supercomputing Institute for Digital Simulation and Advanced Computation (2005)
- University of St. Thomas Engineering Professor of the Year (2005)
- Graduate Teaching Fellowship (2001/2002)
- Institute of Technology Teaching Assistant of the Year, awarded by Institute of Technology Student Board, University of Minnesota (1999/2000)
- Institute of Technology Teaching Assistant of the Year, awarded by Institute of Technology Student Board, University of Minnesota (2000/2001)
- Institute of Technology Teaching Assistant of the Year, awarded by Institute of Technology Student Board, University of Minnesota (2001/2002)
- Mechanical Engineering Teaching Assistant of the Year, Mechanical Engineering Department, University of Minnesota (1998/1999)
- Minnesota Professional Engineers Foundation Orion Buan Memorial Scholarship (1996)
- Walter and Margaret Pierce Endowment Fund Scholarship (1996)
- National Space Grant Consortium Scholarship (1996)
- Frank Louk Scholarship (1996)
- Citizens' Scholarship (1992-1995)
- Alfred O. Neir Scholarship (1994)
- Dean's List (1993-1997)

OTHER POSITIONS

Climate Blogger – Guardian Newspaper

2013-present

PUBLICATIONS

Editing Activities

1. Editor, Advances in Heat Transfer, Vol. 49, Elsevier, 2017 (to appear).
2. Editor, Advances in Heat Transfer, Vol. 48, Elsevier, 2016.
3. Editor, Advances in Heat Transfer, Vol. 47, Elsevier, 2015.
4. Editor, Advances in Heat Transfer, Vol. 46, Elsevier, 2014.
5. Editor, Advances in Numerical Heat Transfer Vol. 5: Numerical Models of Heat Exchangers, Taylor and Francis, New York, 2017.
6. Editor, Small-Scale Wind Power – Design, Analysis, and Economic Impacts, Momentum Press, 2014.
7. Editor, Advances in Heat Transfer, Vol. 45, Elsevier, 2013.

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8. Editor, Advances in Heat Transfer, Vol. 44, Elsevier, 2012.
9. Editor, Advances in Numerical Heat Transfer Vol. 4: Nanoscale Heat Transfer and Fluid Flow, Taylor and Francis, New York, 2012.
10. Guest Editor, Advances in Numerical Heat Transfer Vol. 3: Numerical Implementation of Biological Models and Equations, Taylor and Francis, New York, 2009.
11. Guest Editor, Special Edition of the International Journal of Heat and Mass Transfer: Bioheat and Biofluid Flow, Elsevier, Vol. 51, 23-24, November, 2008.
12. Assistant Editor, Handbook of Numerical Heat Transfer, 2nd Ed. Editors: Sparrow, Minkowycz, and Murthy, John-Wiley & Sons, Inc., New York, 2006.

Editorial Board Member

1. Stem Cell Biology and Transplantation, 2015-present
2. Associate Editor, National Center for Science Education, Climate Science, 2012-present
3. International Journal of Mechanics and Energy, 2012-present
4. Open Mechanical Engineering Journal, 2007-present
5. Open Mechanical Engineering Reviews, 2007-present
6. Open Mechanical Engineering Letters, 2007-present
7. Open Medical Devices Journal, 2008-present
8. Creative Engineering Journal, 2009-present
9. ISRN Applied Mathematics, 2011-present
10. International Journal of Sustainable Energy, 2012 - present
11. International Journal of Materials, Methods, and Technologies, 2012- present

Books

1. J.P. Abraham and B.D. Plourde, Small-Scale Wind Power – Design, Analysis, and Environmental Impacts, Momentum Press, 2014.
2. J.P. Abraham, P.S. Ellis, M.C. MacCracken, and G.M. Woodwell, Climate controversy 2013. New York, NY: AuthorHouse, 2013.
3. J.P. Abraham, E.M. Sparrow, W.J. Minkowycz, R.Ramazani-Rend, and J.C.K. Tong, All Fluid-Flow-Regimes Simulation Model for Internal Flows, Nova Science Publishers, Inc., Hauppauge, NY, 2011.

Book Chapters

1. E.M. Sparrow, J.M. Gorman, J.P. Abraham, W.J. Minkowycz, Validation of Turbulence Models for Numerical Simulation of Fluid Flow and Convective Heat Transfer, in: *Advances in Heat Transfer*, Vol. 49, 397-421, 2017.

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2. J.M. Gorman, E.M. Sparrow, J.P. Abraham, W.J. Minkowycz, Heat Exchangers and Their Fan/Blower Partners Modeled as a Single Interacting System by Numerical Simulation, in: *Advances in Numerical Heat Transfer Vol. 5*, Taylor and Francis, New York, 2017.
3. J.P. Abraham, B.D. Plourde, L.J. Vallez, B.B. Nelson-Cheeseman, J.R. Stark, J.M. Gorman, E.M. Sparrow, Skin Burn, in: *Theory and Application of Heat Transfer in Humans*, edited by Devashish Shrivastava, Wiley, June 2018.
4. M.W. Dewhirst, J.P. Abraham, B.L. Viglianti, Evolution of Thermal Dosimetry for Application of Hyperthermia Treatment to Cancer, in: *Advances in Heat Transfer*, Vol. 47, 397-421, 2015.
5. B.D. Plourde, E.D. Taylor, P.O. Okaka, and J.P. Abraham, Financial and Implementation Considerations for Small-Scale Wind Power, in: *Small-Scale Wind Power – Design, Analysis, and Economic Impacts*, Momentum Press, 2014.
6. B.D. Plourde, E.D. Taylor, W.J. Minkowycz, and J.P. Abraham, Introduction to Small-Scale Wind Power, in: *Small-Scale Wind Power – Design, Analysis, and Economic Impacts*, Momentum Press, 2014.
7. J.P. Abraham, E.M. Sparrow, W.J. Minkowycz, R.Ramazani-Rend, and J.C.K. Tong, Modeling Internal Flows by an Extended Menter Transition Model, in: *Turbulence: Theory, Types, and Simulation*, Nova Publishers, New York, 2011.
8. S. Ramadhyani, J.P. Abraham, and E.M. Sparrow, A Mathematical Model to Predict Tissue Temperatures and Necrosis During Microwave Thermal Ablation of the Prostate, in: *Advances in Numerical Heat Transfer Vol. 3: Numerical Implementation of Bioheat Models and Equations*, Taylor and Francis, New York, 2009.
9. J.P. Abraham and E.M. Sparrow, Heat-Transfer and Temperature Results for a Moving Sheet Situated in a Moving Fluid, in: *Heat-Transfer Calculations*, 2nd ed., editor, Myer Kutz, McGraw-Hill, 2005.

Publications

1. M. T. Sattari, H. Feyzi, and J.P. Abraham, Comparing the Performance of Genetic and Differential Evolution Algorithms in Optimim Operation of Reservoir While Considering the Minimum Environmental Demade, *Stochastic Environmental Research and Risk Assessment (SERR)*, (submitted).
2. M. T. Sattari, A. Farkhondeh, and J.P. Abraham, Estimation of sodium adsorption ratio indicator using data mining methods: a case study in Urmia Lake basin, Iran, *Environmental Science and Pollution Research* (in press).
3. M.T. Sattari, R. Misabbasi, R. S. Sushab, and J.P. Abraham, Prediction of Groundwater Level in the Ardebil Plain Using Support Vector Regression and the M5 Tree Model, *Groundwater Journal*, (accepted).

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4. L. Cheng, K.E. Trenberth, J. T. Fasullo, J.P. Abraham, T.L. Boyer, K. von Schuckman, and J. Zhu, Taking the Pulse of the Planet, *EOS*, Vol. 98, doi: 10.1029/2017EO081839.
5. J.P. Abraham, B.D Plourde, L. J. Vallez, Comprehensive review and study of buoyant air flow within positive-pressure hospital operating rooms, *Numerical Heat Transfer A*, Vol. 72, pp. 1-20, 2018.
6. M.R. Sattari, Dodangeh, and J.P. Abraham, Estimation of Daily Soil Temperature Via Data Mining Techniques in Semi-Arid Climate Conditions, *Earth Sciences Research Journal*, Vol. 21, pp. 85-93, 2017.
7. M.R. Sattari, M. Pal, R. Mirabbasi, and J.P. Abraham, Ensemble of M5 Model Tree Based Modelling of Sodium Adsorption Ratio, *Journal of Artificial Intelligence and Data Mining*, Vol. 6, pp. 69-78, 2018.
8. J.P. Abraham, L. Cheng, M.E. Mann, Future Climate Projections Allow Engineering Planning, *Forensic Engineering*, Vol. 170, pp. 54-57, 2017.
9. B.D. Plourde, L.J. Vallez, B. B. Nelson-Cheeseman, J.P. Abraham, Transcutaneous Rescharge: A Comparison of Numerical Simulation to In Vivo Experiments *Neuromodulation*, Vol. 20, pp. 613-621, 2017.
10. E.M. Sparrow, B.B Nelson-Cheeseman, W.J. Minkowycz, J.M. Gorman, and J.P. Abraham, Use of Multi-Lumen Catheters to Preserve Injected Stem Cell Viability and Injection Dispersion, *Cardiovascular Revascularization Medicine*, Vol. 18, pp. S49-S57, 2017.
11. R. Daneshfaraz, A.R. Joudi, J.P. Abraham, Numerical Investigation on the Effect of Sudden Contraction on Flow Behavior in a 90-Degree Bend, *Korean Journal of Civil Engineering*, (in press), doi: 10.1007/s12205-017-1313-3.
12. L.J. Vallez, B.D. Plourde, J.E. Wentz, B. B. Nelson-Cheeseman, J.P. Abraham, A Review of Scald Burn Injuries, *Internal Medicine Review*, Vol. 3, pp. 1-18, 2017.
13. R. Daneshfaraz, H. Sadeghi, A. R. Joudi, J.P. Abraham, Experimental Investigation of Hydraulic Jump Characteristics in Contractions and Expansions, *Sigma Journal of Engineering and Natural Sciences*, Vol. 35, pp. 87-98, 2017.
14. R. Daneshfaraz, A. R. Joudi, A. Ghaderi, J.P. Abraham, Comparisons of CFD Simulations with Physical Models of Dam Spillway Flow (Case Study: Azad Dam Spillway, Iran), *Journal of Dams and Reservoirs*, (accepted).
15. G. Wang, L. Cheng, J.P. Abraham, C. Li, Consensuses and Discrepancies of basin-scale ocean heat content changes in different ocean analyses, *Climate Dynamics* (in press, available online, doi: 10.1007/s00382-017-3751-5).

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16. L.J. Cheng, K.E. Trenberth, T. Boyer, J. T. Fasullo, L. Zhu, J.P. Abraham, Improved Estimates of Ocean Heat Content from 1960-2015, *Science Advances*, Vol. 4, paper no. e1601545, 2017.
17. J.M. Gorman, E., M. Sparrow, J.P. Abraham, W.J. Minkowycz, Heat Transfer Design Methodology Treating a Heat Exchanger Device and its Fluid-Mover Partner as a Single System, *Heat Transfer Engineering*, Vol. 38, pp. 841-852, 2017.
18. R.T. Bourdon, B.B. Nelson-Cheeseman, and J.P. Abraham, Review on the Treatment and Avoidance of Scald Injuries, *World Journal of Dermatology*, Vol. 6, pp. 17-26, 2017.
19. B.D. Plourde, J.R. Stark, J. P. Abraham, A New Catheter Technology to Deliver Vascular Stem-Cells, *Global Journal of Stem Cell Biology and Transplantation*, Vol. 2, pp. 7-16, 2016.
20. J.R. Stark, S.R. Romero, J.M. Gorman, J.P. Abraham, E.M. Sparrow, Modulated-Power Implantable Neuromodulation Devices and Their Impact on Surrounding Tissue Temperatures, *Journal of Biomedical Science and Engineering*, Vol. 9, pp. 545-562, 2016.
21. L. Cheng, K.E. Trenberth, M.D. Palmer, J. Zhu, and J.P. Abraham, Observed and Simulated Full-Depth Ocean Heat Content Changes for 1970-2005, *Ocean Sciences*, Vol. 12, pp. 925-935, 2016.
22. J.M. Gorman, E.M. Sparrow, J.P. Abraham, W. J. Minkowycz, Evaluation of the Efficacy of Turbulence Models for Swirling Flows and Effect of Turbulence Intensity on Heat Transfer, *Numerical Heat Transfer B*, Vol. 70, pp. 485-502, 2016.
23. J.P. Abraham, B.B. Nelson Cheeseman, E. M. Sparriow, J.E. Wentz, J.M. Gorman, S. E. Wolf, Comprehensive Method to Predict and Quantify Scald Burns from Beverage Spills, *Int. J. Hyperthermia*, Vol. 32, pp. 900-910, 2016.
24. B.D. Plourde, L.J. Vallez, B. Sun, B.B. Nelson-Cheeseman, J.P. Abraham, Alterations of Blood Flow Through Arteries Following Atherectomy and the Impact on Pressure Variation and Velocity, *Cardiovascular Engineering and Technology*, Vol. 7, pp. 280-289, 2016.
25. N.K. Langat, T. Thorusa, J.P. Abraham, J. Wanyoko, Performance of an Improved Fluidized System for Processing Green Tea, *World Academy of Science Engineering and Technology*, Vol. 10, 1045-1050, 2016.
26. L. Cheng, J. Abraham, G. Goni, T. Boyer, S. Wijffels, R. Cowley, V. Gouretski, F. Reseghetti, S. Kizu, S. Dong, F. Bringas, M. Goes, L. Houpert, J. Sprintall, and J. Zhu, XBT Science: Assessment of XBT Biases and Errors, *Bulletin of the American Meteorological Society*, June, pp. 924-933, 2016.

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27. J.P. Abraham, R. Cowley, L. Cheng, Quantification of the Effect of Water Temperature on the Fall Rate of eXpendable BathyThermographs, *Journal of Atmospheric and Oceanic Technology*, Vol. 6, pp. 1271-1284, 2016.
28. R.T. Bourdon, B.B. Nelson-Cheeseman, and J.P. Abraham, Prediction, Identification, and Initial Treatment Guidelines for Scald Injuries, *Austin Journal of Emergency and Critical Care Medicine, Special Issue on Burns*, Vol. 3, pp. 1043-1049, 2016.
29. J.C.K. Tong, J.P. Abraham, J.M.Y. Tse, W.J. Minkowycz, and E.M. Sparrow, New Archive of Heat Transfer Coefficients from Square and Chamfered Cylinders in Crossflow, *International Journal of Thermal Sciences*, Vol. 105, pp. 218-223, 2016.
30. L. Cheng, K.E. Trenberth, M.D. Palmer, J. Zhu, and J. P. Abraham, Observed and Modeled Ocean Heat Content Changes Since 1970, *Ocean Sciences*, Vol 12, pp. 925-936, 2016.
31. R. Daneshfaraz, A. Ghahramanzadeh, A. Ghaderi, A. Rezazadeh Joudi, and J.P. Abraham, Investigation of the Effect of Edge Shape on Characteristics of Flow Under Vertical Gates, *Journal AWWA*, Vol. 8, pp. E425-432, 2016.
32. J.P. Abraham, B.D. Plourde, L.J. Vallez, and B.B. Nelson-Cheeseman, Correcting a Prevalent Misunderstanding of Burns, *Burns*, Vol. 42, pp. 715-716, 2016.
33. J. P. Abraham and B.D. Plourde, Validation of Numerically Simulated Tissue Temperatures During Transcutaneous Recharge of Neurostimulation Systems, *Journal of Neuromodulation*, Vol. 19, pp. 161-170. 2016.
34. R. Daneshfaraz, A. Joudi, and J.P. Abraham, Numerical Investigation on the Effects of Sudden Contraction on Flow Behavior in a 90-Degree Bend, *J. Hydraulic Engineering*, (under review).
35. L.J. Vallez, B.D. Plourde, and J.P. Abraham, A New Computational Thermal Model for the Whole Human Body: Applications to Patient Warming Blankets, *Numerical Heat Transfer A*, Vol. 69, pp. 227-241, 2016.
36. J.P. Abraham, B.D. Plourde, B. Sun, L.J. Vallez, and C.S. Staniloae, The Effect of Plaque Removal on Pressure Drop and Flowrate Through a Stenotic Lesion, *Biology and Medicine*, Vol. 8, article no. 1000261, 2015.
37. L.J. Vallez, B. Sun, B.D. Plourde, J.P. Abraham, and C.S. Staniloae, Numerical Analysis of Arterial Plaque Thickness and its Impact on Artery Wall Compliance, *J. Cardiovascular Medicine and Cardiology*, Vol. 2, pp. 26-34, 2015.
38. D. Nguyen, J. M. Gorman, E.M. Sparrow, and J.P. Abraham, Convective Heat Transfer Enhancement Versus Disenhancement: Impact of Fluid-Mover Characteristics, *Applied Thermal Engineering*, Vol. 90, pp. 242-249, 2015.

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106. John Abraham, Chris Greene, Anthony Marchese, External Assessment Through Peer-to-Peer Evaluation of Capstone Projects, *Frontiers in Education*, Milwaukee, WI, October, 10-13, 2007.

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107. John Abraham, Computation Fluid Dynamics Using ANSYS CFX, presented at the University of Minnesota Digital Technology Center, Sept. 12 and 14, 2006.
108. John Abraham, Application of the Finite Element Method, *LifeSciences Conference*, Minneapolis, October 5, 2006.
109. John Kim and John Abraham, Design of Experiments in the Medical Device Industry, *LifeSciences Conference*, Minneapolis, October 5, 2006.
110. Ephraim Sparrow, Nick Whitehead, and John Abraham, Fluid Flow Dynamics in the Urinary Tract – Impact on Device Design, Presented to the Department of Urologic Surgery, April 17, 2006.
111. John Abraham, Nick Whitehead, and Ephraim Sparrow, Numerical Simulation of Thermal Therapies, Presented to the Department of Urologic Surgery, April 17, 2006.
112. John Abraham, Nick Whitehead, and Ephraim Sparrow, Biomedical Applications Simulations/Experimental Investigations, *Biomedical Focus 2006*, Brooklyn Center, MN, March 20-21 , 2006.
113. Nick Whitehead, Ephraim Sparrow, and John Abraham, A Role for Engineering in Medical Simulations, *Simulation in Healthcare*, Minneapolis, MN, November 28, 2005.
114. Ronald Major and John Abraham, The Application of Thermal Analysis on a Disk Array, *Fluent's 2005 CFD Summit*, Detroit, MI, June 7-8, 2005.
115. Camille George and John Abraham, A Sustainable Low-Energy Cooling System for Hot Dry Climates, *Sustainability as Security*, Austin, TX, October 5-9, 2005.
116. John P. Abraham and Ephraim M. Sparrow, Irrelevance of the Relative Velocity as the Characteristic Velocity When Both a Fluid and its Bounding Surface are in Motion, *Lorenz G. Straub Award*, Minneapolis, MN, November 13, 2004.
117. John P. Abraham and Ephraim M. Sparrow, An Unexpected U-Turn After an Eckert Straight Start, *Eckert Symposium*, Minneapolis, MN, September 13-14, 2004.
118. John P. Abraham and Ephraim M. Sparrow, Methodologies to Enhance the Numerical Simulations of Electronic Cooling, *Semi-Therm Conference*, San Jose, CA, March 9-10, 2004.
119. Ephraim M. Sparrow, John P. Abraham, and Paul Chevalier , A DOS-Enhanced Numerical Simulation of Heat Transfer and Fluid Flow Through an Array of Offset Fins with Conjugate Heating in the Bounding Solid, *ASME International Mechanical Engineering Congress and R & D Expo*, Washington, DC, November, 2003.

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- 120. J. P. Abraham, Ephraim M. Sparrow, Student-Related Research "Thermal Design Capstone Projects", *ASME International Mechanical Engineering Congress and R & D Expo*, Washington, DC, November, 2003.
- 121. Sparrow, E.M., Martin, G.L., Abraham, J.P., and Tong, J.C., Air-to-Air Energy Exchanger Test Facility for Mass and Energy Transfer Performance. *American Society of Heating, Refrigeration, and Air-Conditioning Engineers Annual Meeting*, Inc., Cincinnati, OH, ASHRAE Symposium Paper, 2001.
- 122. Tamma, K.K., Zhou, X., Abraham, J., and Anderson, C.V.D.R., Constitutive Model Theories and Plausible Propositions/Challenges to Heat Transport Characterization. *ASME/JSME Joint Thermal Engineering Conference*, March, 1999.

Granted Patents

- 1. Robert Monson and John Abraham, "Dual-phase thermal electricity generator", U.S. Patent # 8,484,974.
- 2. Robert Monson and John Abraham, "Variable Orifice Valve", U.S. Patent # 7,559,485
- 3. Robert Monson, John Abraham, Joseph Crimando, Joel Farley, Matthew Linder, and Joel Seipel, "Vehicle Energy Absorption Apparatus", US Patent # 8,118,255.
- 4. B.D. Plourde and J.P. Abraham, "Rotor Blade for Vertical Axis Wind Turbine", US Patent # 9,482,204/ WO 2011150171.

Pending Patents

- 1. B. D. Plourde, J. P. Abraham, D.R. Plourde, R.Pakonen, "Method of Calculating Pathogen Inactivation for Fluid Heating System", US Patent Application Number 14/954,383, Filed December 1, 2015.
- 2. B. D. Plourde, J. P. Abraham, D.R. Plourde, R.Pakonen, "Control Valve Assembly for Fluid Heating System", US Patent Application Number 14/954,318, filed December 1, 2015.
- 3. B.D. Plourde, J.P. Abraham, D. Plourde, R. Pakonen, A. Gikling, N. Naughton, "Fluid Heating System", US Patent Application Number 14/954,292, filed December 1, 2015.
- 4. B.D. Plourde, J.P. Abraham, D.R. Plourde, A. Gikling, R. Pakonen, "Dual-Axis Tracking Device", US Patent Application Number 14/954,091, filed December 1, 2015.
- 5. B.D. Plourde, J.P. Abraham, "Solar Heating System", US Patent Application No. 62/423,814 (filed November 18, 2016).

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6. B.D. Plourde, A. Gikling, J.P. Abraham, R. Pakonen, "Digital Fluid Heating System", US Patent Application Number 15/818,052, filed November 20, 2017; PCT Application Number US2017/062558, filed November 20, 2017.

LEGAL EXPERIENCE

Expert Witness

2017

OAH Docket Nos. 65-2500-32764 and 65-2500-33377

MPUC Docket Nos. PL9/CN-14-916 and PPL-15-137

- Testified in impacts of pipeline on climate change
- Testified on behalf of Youth Climate Intervenors
- Testified Friday November 17, 2017

Expert witness

2017-present

Trinidad Michaca v. Starbucks Corp (30-2016-00857438-CU-PO-CJC)

- Retained by Dominguez Law Firm (plaintiff)
- Burn injury expert, plaintiff
- Orange County California

Expert witness

2017-present

- Retained by Fox Rothschild Winthrop Shaw Pittmann LLP (plaintiff)
- Expert on patent infringement, inflatable beds
- Drafted Rule 11 declaration in support of infringement litigation

Expert witness

2017-present

ResMed Limited v. Fischer-Paykell and NYU

- Retained by Nixon and Vanderhye PC (defendant)
- Expert in CPAP flow device and control
- Prepared expert declaration for IPR case

Expert witness

2017-present

- Retained by Pillsbury Winthrop Shaw Pittman, LLP (defendant)
- Retained as expert on autonomous broom robotic devices
- International Trade Commission investigation 337-TA-1057
- Depositions December 22, 2017

Expert witness

2016-present

- Retained by Alder Law (plaintiff)
- Burn injury expert, plaintiff
- Monterrey County, Case No. M 133374
- Settled

Expert witness

2016-present

Controls Southeast, Inc. v. QMax Industries, LLC, IPR2017-00976 and IPR2017-00977

United States Patent and Trademark Office

- Retained by Ratner Prestia (on behalf of Controls Southeast, Inc.) (plaintiff)
- Expert witness on heat tracer technology

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- Expert witness on Inter Partes Review
- Drafted two IPR expert declarations
- Drafted claim construction declaration

Expert witness

2017

**State of Minnesota, County of Clearwater, District Court - Ninth Judicial District
State on Minnesota v. Annette Marie Klapstein, Emily Nesbitt Johnston, Steven Robert
Liptay, and Benjamin Joldersma**

Case file nos:

15-CR-16-413
15-CR-16-414
15-CR-16-425
15-CR-17-25

- Retained by Climate Defense Project
- Expert witness on social cost of climate and climate change

Expert witness

2016

**United States International Trade Commission
Washington, D.C. 20436**

Select Comfort vs. American National Manufacturing

- Retained by Pillsbury Winthrop Shaw Pittman, LLP (plaintiff)
- Expert witness on intellectual property, inflatable mattresses
- Submitted expert reports on validity and infringement
- Case settled

Expert witness

2016-present

**Minnesota, Second Judicial District
Judy E. Minor v. Phalen Parkway Lofts
Court file no. 62-CV-16-1890**

- Retained by Goetz and Eckland (defense)
- Expert witness on scald injury
- Submitted expert report

Expert witness

2016-present

Fluke v. AMETEK Denmark A/S, IPR2016-01428

United States Patent and Trademark Office

- Retained by Ratner Prestia (defendant)
- Petition for Inter Partes Review
- Expert witness on thermal calibration systems
- Drafted expert declaration
- Deposition, July 10, 2017
- IPR decision in favor of defendant

Expert witness

2016

**United States International Trade Commission, 337-TA-971.
Washington, D.C. 20436
Select Comfort vs. American National Manufacturing**

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- Retained by Pillsbury Winthrop Shaw Pittman, LLP (plaintiff)
- Expert witness on intellectual property, inflatable mattresses
- Deposition May 18, 2016
- International Trade Commission Testimony August 8, 9, 10, and 11, 2016
- Decision in favor of plaintiff

Expert witness **2016-present**

Department of Justice vs. Spectrum Brands, Inc.

US District Court, Western District Wisconsin

Case no: 3:15-cv-00371

- Retained by US Department of Justice (plaintiff)
- Product malfunction, scald injury case
- Summary judgement for plaintiff

Expert witness **2015-present**

Juliette Piatt and Mark Piatt vs. Vicky Bakery Café

Circuit Court of the 17th Judicial Circuit, Broward County, Florida

- Retained by Ellsley Sobol, (plaintiff)
- Expert witness on scald burn injury
- Settled

Expert witness, **2015-2016**

Douglass and Heather Beaven vs. AER LINGUS Limited

Case no: 3:15-cv-952-J-34MCR

U.S. District Court Middle District of Florida, Jacksonville Division

- Retained by Rumrell, McLeod, and Brock, (plaintiff)
- Expert witness on scald burn injury
- Confidential settlement

Expert Witness, **2015-present**

Tommy Walton v. 3M Company

U.S. District Court for the Southern District of Texas, CAFN: 4:13-cv-01164

and

Timothy Johnson vs. 3M Company and Arizant Healthcare

U.S. District Court, District of Kansas, 12:14-cv-02044KHK-KGS

- Retain as an expert by Greenberg Traurig and by Blackwell Burke (defendant)
- Expert witness on medical-product safety
- Deposed, July 20, 2017

Expert Witness **2015**

OAH Docket No. 80-2500-31888

MPUC Docket No. E-999-CI-14-643

- In the Matter of Further Investigation in to the Environmental and Socioeconomic Costs under Minnesota Statute 216B.24422, Subdivision 3
- Representing Minnesota Center for Environmental Advocacy
- Expert witness on climate change
- Submitted expert report, rebuttal report, surrebutal report.

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- Testified September 28, 2015
- Judge decision in favor of Minnesota Center for Environmental Advocacy

Expert Witness

Select Comfort vs. Tempur Sealy
United States 8th District Court, Minnesota
Court file No. 14-cv-00245-JNE-JSM

2015

- Retained as an expert by Oppenheimer Wolff and Donnelly LLP (plaintiff)
- Expert witness on intellectual property, patent validity, inflatable mattresses
- Infringement Deposition, August 16, 2016
- Validity deposition, August 29, 2016.
- Settled

Expert Witness

Select Comfort vs. Gentherm, Inc.
United States 8th District Court, Minnesota

2014

- Retained by Oppenheimer Wolff and Donnelly LLP (defense)
- Expert witness on intellectual property, patent validity
- Patent infringement claim withdrawn

Expert Witness

OAH Docket No. OAH 8-2500-30952
PUC Docket No. PL-9/CN-13-153

2014

- In the Matter of the Application for a Certificate of Need for the Line 67-Phase 2 Upgrade Project
- Representing MN350 and Sierra Club
- Expert witness on tar sands pollution emissions
- Testified, April 10, 2014

Expert Witness

Ellie Gwen vs. Lams Garden Restaurant
Circuit Court of the 9th Judicial Circuit, Orange County, Florida.

2013-2015

- Retained by Fisher, Rushmer, and Werrenrath (plaintiff)
- Expert witness on scald burn
- Gave deposition and trial testimony
- Verdict for plaintiff, 100% liability for defendant, award ~ \$1 million
- Deposition April 1, 2015
- Trial Testimony May 14, 2015

Expert Witness, Donaldson vs. Baldwin Filters

U.S. District Court, District of Minnesota, Case no.: Civil 0:09-cv-01049-JMR-AJB (plaintiff)

2010-2012

- Retained by Faegre and Benson
- Expert witness on patent infringement involving air-filters
- Settlement in favor of plaintiff

Expert Witness, DJO vs. Coolsystems, Inc.

- Retained by Ropes and Gray, LLP (defense)

2010

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- Expert witness for plaintiff, infringement arbitration
- Arbitration in favor of plaintiff

Expert Witness, Brandon v Shell Oil

2009-2010

- Retained by Walkup, Melodia, Kelly and Schoneberger (plaintiff)
- Expert witness for plaintiff, skin burn injury
- Settlement in favor of plaintiff

Expert Witness, Hansen vs. Luna (1-07-CV-08851)

2008-2009

- Retained by Wilson Sonsini Goodrich and Rosati (defense)
- Expert witness for defendant, intellectual property
- Gave deposition
- Trial verdict in favor of plaintiff

New Prime, Inc. vs. Great Dane Limited Partnership, United States District Court, Western District, Missouri, Southern Division, Case No. 06-3361-CV-S-GAF.

2007

- Expert witness product malfunction (plaintiff)

Greg Albers v. Mayo Clinic

2005-2008

- Retained as burn expert (plaintiff)

Ultra Cartridge Corp v. John Cottrell and Capsule Technologies (Civ. File 02-CV-343)

2002

- Retained by Robbins, Kaplan, Miller, and Ciresi to represent plaintiff
- Assisted in expert declaration of Ephraim Sparrow